THURSDAY, FEBRUARY 26, 1891.

DOGS, JACKALS, WOLVES, AND FOXES.

Dogs, Jackals, Wolves, and Foxes: A Monograph of the Canidæ. By St. George Mivart, F.R.S. With Woodcuts, and 45 Coloured Plates drawn from Nature by J. G. Keulemans. (London: R. H. Porter, and Dulau and Co., 1890.)

THE group which Prof. Mivart has selected for a handsome, and, as far as materials are available, fairly exhaustive monograph, is one which has the advantage of being, in the present condition of the world's fauna, of strictly definite limits. On the other hand, the very numerous minor variations which occur within these limits give rise to many problems difficult of solution. While there is no difficulty in deciding what animals should be admitted into the *Canidæ*, the questions as to how many distinct specific modifications of the family should be accepted and what their relations are to one another are as difficult to answer in this case as in almost any other in zoology. It may indeed be doubted whether there will ever be any general accord upon such subjects in respect to any group of modern origin, and in which variation and differentiation are still rife. It is only in the ancient groups where extinction has played havoc among the members, and long-continued isolation has stereotyped certain definite forms that we can meet with species which will be universally recognized as such. In such a group as the *Canidæ*, therefore, opinions are sure to differ as to the number and limits of the species, and these opinions will be continually liable to modification in accordance with the amount of material upon which they are based.

We are glad to read in the preface of this work of "the rich and unrivalled stores of canine animals accumulated in the British Museum of Natural History," but we see ample evidence throughout the work that, far superior as this collection is at present to any which is available to a monographer of the group, much remains to be done before it can be considered exhaustive. The following observation under the head of *Canis azaræ*, is also applicable to other sections, and should be taken to heart by all concerned. "It is greatly to be desired that a numerous collection should be made of all the kinds of South-American dogs, the locality and sex of each individual being noted, as well as the time of year when it was obtained, the skull not being extracted from the skin, save at the Museum in which it may be deposited."

The present monograph has the great merit of placing in an accessible and attractive form all that is really known of the *Canidæ*, on what may be called a strictly conservative basis. If it only brings together, without greatly advancing our knowledge, it does absolutely nothing, as so many similar attempts have done, to confuse and retard it. Not a single new generic term, and only two new specific names are proposed—a mercy for which future zoologists may well be thankful. There are scarcely any speculations and certainly no assumptions on unknown and problematical subjects such as the ancestral history of the group treated of, or even on that very interesting but at present quite unsolved problem, the origin of the domestic dog. With regard to the first the author candidly avows, "Phylogeny, or the science of such evolution of forms of life, seems to us to be not merely in its infancy, but rather at a low stage of embryonic development. We have already seen the overthrow of a great many promising and carefully drawn out genealogical trees of life, and therefore feel little inclined to attempt now to construct the pedigree of the dog family."

The already established, though perhaps not universally admitted generic distinctions of the few aberrant forms, which can be definitely defined either by the number of the toes or of the teeth differing from those of typical *Canis*, are retained. These are *Lycaon*, with but four digits instead of five on the fore-feet, *Cyon* with two lower molars instead of three, *Icticyon* with a molar deficient, and *Otocyon* with one added, in either jaw. The whole of the other members of the group remain under the generic appellation of *Canis*, no value being attached to the numerous divisions of Gray, Burmeister, and others. Of this genus thirty species are admitted, including *C. domesticus*, upon the origin of which, as hinted above, Dr. Mivart is most cautious in hazarding any opinion of his own, though fairly stating the different views (amounting to eight in number) which have been or may be held by others, and adding:—"For our part we think that the evidence is as yet insufficient for us to enunciate any judgment in the matter. We have endeavoured to point out that it is possible that the origin of the dog may have been single or multiple, but we refrain from declaring that we regard either the one or the other as preponderatingly evident. Nevertheless our judgment inclines to the view that the domestic dog is a form which has been evolved by human effort from at least two, probably more, wild species, though it is possible it may be but a modification of one which has long become extinct save in its domestic and feral progeny."

Each of the recognized species is carefully described, mainly from specimens in the British Museum, both in its typical and varietal forms where such occur, and much useful information is given as to its general history, habits, and geographical distribution. Moreover, and this will be considered by many possessors of the book as one of its most valuable features, a coloured illustration is given of every species, and in some cases of several of the best marked varieties of each, there being forty-five of such plates. Fourteen of these are drawn from the actual type on which the species was founded. Of these figures, which are all original and hand-coloured, many are excellent, but it is difficult to say the same of all. In constructing drawings of animals from skins or indifferently stuffed specimens, although accuracy in detail of colouring may be secured, much must be left to the artist's skill as to the proportions, attitude, and expression, which in such a large number of figures of similar forms must tax his resources to the uttermost, and it is no wonder that some of them are rather stiff and wanting in life-like character. Perhaps we may be considered hypercritical in such matters, but we may instance Plate I., the common wolf, as a scarcely adequate repre-

©1891 Nature Publishing Group

sentation of that familiar animal. On the other hand, the numerous woodcuts, giving details of cranial and dental characters, leave nothing to be desired, either in accuracy or artistic finish, and the book is, taken altogether, one which should be found in every complete zoological library.

PRIMITIÆ FL. SHAN.

On a Collection of Plants from Upper Burma and the Shan States. By Brigadier-General H. Collett, C.B., F.L.S., and W. Botting Hemsley, F.R.S., A.L.S. In Journal of the Linnean Society, vol. xxviii. (November 5, 1890). Pp. 1–150, tt. 1–22, with a Map.

UPPER BURMA is an arid plain, with an annual rainfall of about 30 inches, containing some isolated mountains. On the east of it are the Shan States, consisting of plateaus, mostly 3000–4000 feet above the sea, traversed by ranges of mountains, attaining 6000–7000 feet, running north and south, and having an annual rainfall estimated at 60 inches. The Shans occupy a large area of this hill country having Siam on the south, Tonquin on the east, and Yunnan on the north and north-east; they are a tribe of the great people denominated (generically) Kookies by Colonel MacCulloch, who extend (in the hills almost universally) from the bend of the Brahmapootra (at the west extremity of Assam) to the mountains north of Canton; the Kalangs in Java and the Mundas of Chota Nagpore may be outlying remnants of this people. The Shan States (or rather the south-west portion of them, for the political boundary of China is hereabout uncertain) had been more or less dependent on Burma. After the annexation of Upper Burma by the English, the Shans had to be got in; and, as is nearly always the case with imperfectly civilized peoples, it was found a necessary preliminary to the establishment of a beneficent despotism that a few should be shot. This duty, in 1887–88, fell to the lot of General H. Collett. No officer could have been selected who would have performed it more mercifully; he is a botanist. In the Shan States during this anxious service, and in the adjacent plain of Upper Burma (including the isolated Mount Popah, alt. 5000 feet), General Collett collected the 725 species of Phanerogams which form the *materies* of the paper we have under notice. Of these 87 are new to science, and several others were very imperfectly known previously. The richness of this collection is due to the fact that General Collett is not a mere collector, who gathers up everything in a new country that comes to his hand, and then sends it to Kew to be matched and named; but a botanist who could (in this remote ground almost cut off from books) determine the genus of most of the plants he lighted on *in the field*. But having to proceed to India to command the province of Assam, General Collett was obliged to leave the description of his collections largely to Mr. Hemsley.

The climate of the plain of Upper Burma is very much drier than that of Bengal and Assam; and the flora, only imperfectly known from the collections of Wallich and of Griffith, contains some plants of the north-west, central provinces, and south of India not known to inhabit the intermediate wet area of East Bengal, Assam, Chittagong, &c. Mr. Hemsley estimates that 25 species out of the 725 collected by General Collett are of this class; but this is perhaps rather an over-estimate, for out of the four *species* he names as absent in the connecting intermediate region, two, viz. *Priva leptostachya* and *Anisopappus Chinensis* are in quantity in the Khasi and Naga Hills (in Assam). But the fact, of a connection between the flora of the Upper Burma plain and that of the drier region of India, whether north-west, central, or south, is as Mr. Hemsley states it.

The flora of the Shan Hills is much richer, more interesting, and novel than that of the Upper Burmese plain. The country lies in a botanic *regio incognita* between the (more or less) known floras of Assam, Burma, and Tonquin (with Yunnan). The plateaus at 3000–5000 feet elevation are often bare; and, as is clear from General Collett's description, exceedingly like the open bare Khasi plateau (depicted by Sir J. D. Hooker in his "Himalayan Journal," vol. ii.). The flora is also very closely allied. It is difficult, without abstracting the entire list of new species, to give a worthy notion of them; but the most interesting having been selected for figuring, we give here the list of plates of the *new* plants:—

2. *Capparis Burmanica*, Coll. et Hemsl.
3. *Hypericum pachyphyllum*, Coll. et Hemsl.
4. *Impatiens ecalcarata*, Coll. et Hemsl.
5. *Crotalaria perpusilla*, Coll. et Hemsl.
6. *Neocollettia gracilis*, Hemsl.
7. *Phylacium majus*, Coll. et Hemsl.
8. *Bauhinia tortuosa*, Coll. et Hemsl.
9. *Rosa gigantea*, Coll.
11. *Lonicera Hildebrandiana*, Coll. et Hemsl.
12. *Inula crassifolia*, Coll. et Hemsl.
13. *Ceropegia nana*, Coll. et Hemsl.
14. *Brachystelma edulis*, Coll. et Hemsl.
16. *Strobilanthes connatus*, Coll. et Hemsl.
17. *Phacellaria caulescens*, Coll. et Hemsl.
18. *Sauropus concinnus*, Coll. et Hemsl.
19. *Bulbophyllum comosum*, Coll. et Hemsl.
20. *Cirrhopetalum Collettianum*, Hemsl.
21. *Polygonatum Kingianum*, Coll. et Hemsl.
22. *Lilium Bakerianum*, Coll. et Hemsl.

Of these *Rosa gigantea* is the largest wild rose (flowers 4 inches diameter) yet found; *Lonicera Hildebrandiana* is the largest honeysuckle (flowers 6½ inches long) yet found; the two orchids are extraordinary species, though located in old genera. *Neocollettia* (Hemsley, *genus novum*) is a 1-ovulate plant placed by Mr. Hemsley next *Phylacium*, but is probably as Mr. Hemsley suggests) one of the tribe *Phaseoleæ* (near *Rhynchosia*).

This collection enables us to estimate the wealth of the newly annexed territory; General Collett has added some observations on agriculture and economic botany. The Khasi pine is plentiful, and (as in several of the adjacent regions) valuable oaks are plentiful, 9 species having been collected by Collett. The area altogether included in General Collett's paper extends from 19° 30′ to 21° 30′ lat., and from 95° to 97° 30′ East long.; and contains probably not less than 4000 species of which Collett's collection gives us 725. Mr. Hemsley, in his part of the introduction, observes that the species are to the genera as 725 to 460, *i.e.* about as 1·6 to 1, and that these proportions closely approach those obtaining in many insular floras. But similar proportions usually occur when any area is imperfectly collected over. Thus in the

©1891 Nature Publishing Group